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Partners in Energy

# Renewable Energy Options for Centennial Residents

July 15, 2021  
7:00 – 8:30 pm



# WELCOME!

- Please keep your microphone muted
- Webcam use is optional but encouraged
- Use the chat function or the raise your hand feature to ask a question
- This webinar is being recorded for future playback and will be posted online



# AGENDA

Time	Topic
7:00 pm	Welcome & Introductions
7:05	About Centennial's Energy Action Plan
7:10	Renewable Energy Basics & Benefits
7:25	Renewable Energy Opportunities for Residents
7:55	Tips & Resources
8:10	Questions & Open Discussion
8:25	Wraps-up & Survey

# PANELISTS & INTRODUCTIONS

Tim Aston  
*Arapahoe County  
Extension*

Channing Evans  
*Xcel Energy  
Communications  
Specialist*

Wyatt Peterson  
*City of Centennial  
Senior Management  
Analyst*

Shelby Sommer  
*Partners in Energy  
Community Facilitator*

Tyler Will  
*Xcel Energy Solar Trade  
Relations Manager*

Please “e-introduce” yourself by typing your first name and how long you have lived in Centennial in the chat box.

# ENERGY UTILITIES IN CENTENNIAL

## Electricity

- Xcel Energy serves western Centennial
  - Note you must be an Xcel Energy electricity customer to participate in some Xcel Energy rebate programs
- IREA Energy serves eastern Centennial
  - East of Cherry Creek (the river) or roughly east of Highway 83



## Natural Gas

- Xcel Energy serves all of Centennial



# CENTENNIAL'S ENERGY ACTION PLAN

## Vision

*The City of Centennial will create a resilient future for its residents and businesses through improved energy efficiency, enhanced connectivity, education, and cost savings.*

Review the full plan online at  
[www.centennialco.gov/energy](http://www.centennialco.gov/energy)

## Goals

- Help residents **save money** through energy efficiency programs and rebates.
- Connect businesses with **free and low-cost** energy efficiency programs.
- Ensure community facilities are **running efficiently** and taking advantage of rebate opportunities.

# RENEWABLE ENERGY 101

## Basic Terms & Concepts

- Wind
- Solar – on-site & distributed
- Community solar
- Net-Metering
- Subscriptions
- Renewable Energy Credits
- Lease versus Power Purchase Agreement (PPA)

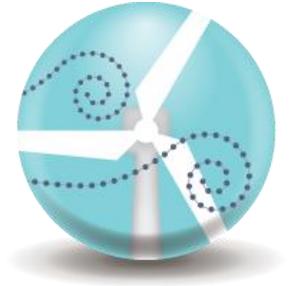
## Benefits & Considerations

- Return on investment/cost savings
- Environmental legacy/stewardship
- Resilience & energy independence
- Jobs & workforce development



# WIND ENERGY

The conversion of the kinetic energy of wind into mechanical power.



## Utility-Scale Wind

Megawatt-sized sources of wind energy, typically involving a large number of wind turbines built closely together (wind farm).

## Distributed/"Small" Wind

Wind turbines typically below 100 kilowatts that are used to directly power a property.

# SOLAR PHOTOVOLTAIC (SOLAR PV)

Solar cells/panels that convert sunlight into electricity (convert light, or photons, into electricity, or voltage).



## On-Site Solar

### Ground or Rooftop

Panels installed at the property is generating energy for. Panels are commonly installed on building roof surfaces (rooftop solar). Sometimes panels are installed on the ground (ground-mount solar).

## Distributed Solar

### Community Solar Garden

Shared solar array with grid-connected subscribers who receive bill credits for their subscriptions. This is for people who want to use solar but unable to do so on their property.

### Utility-Scale Solar

Large-scale electricity generation; typically, larger than 4 megawatts. Sometimes referred to as solar farms.

# LEARNING CHECK: WHICH TYPE OF SOLAR IS THIS?

Photo 1



Photo 2



Photo Credits: Brendle Group

# COMMON INDUSTRY TERMS



## Net Metering

Ability for renewable energy system owners to send the extra power they generate but don't use to the grid in exchange for banked energy credit they can use when they need it later.

## Subscription

An agreement to purchase a certain amount of something in regular intervals.

## Renewable Energy Credit/Certificate (REC)

Tradable, non-tangible commodities that represent proof that 1 megawatt-hour (MWh) of electricity was generated from an eligible renewable energy resource and was fed into the shared grid.

# SOLAR FINANCING



Often customers can purchase solar for little or no money down through a solar lease or power purchase agreement (PPA)

## Solar Lease

- Customer will sign a contract with an installer/developer and pay for the solar energy system over a period of years or decades, rather than paying for the power produced.
- Solar leases can be structured so customers pay no up-front costs, some of the system cost, or purchase the system before the end of the lease term.
- Similar to an automobile lease.

## Power-Purchase Agreement

- Installer/developer builds a solar energy system on a customer's property at no cost. The solar energy system offsets the customer's electric utility bill, and the developer sells the power generated to the customer at a fixed rate, typically lower than the local utility.
- At the end of the PPA contract term, property owners can extend the contract and even buy the solar energy system from the developer.



# RENEWABLE ENERGY BENEFITS



Savings Potential



Environmental Stewardship



Increased Resiliency



Jobs & Economic Development

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# RENEWABLE ENERGY OPPORTUNITIES



# COLORADO RENEWABLE GROWTH



## #1 in Wind

- Nation's #1 utility wind provider for 12 years
- More than 2,500 MW of wind in CO
- Addition of 600 MW Rush Creek wind farm approved in CO



## Universal Renewables Benefit Everyone

- Low-cost renewable growth
- Clean, carbon-free renewables for everyone
- 25% carbon reduction since 2005
- 156 MW Comanche Solar project is the largest in the intermountain west

Image Credits: Xcel Energy

# XCEL ENERGY'S CHANGING ENERGY MIX

## 2020 – Xcel Energy

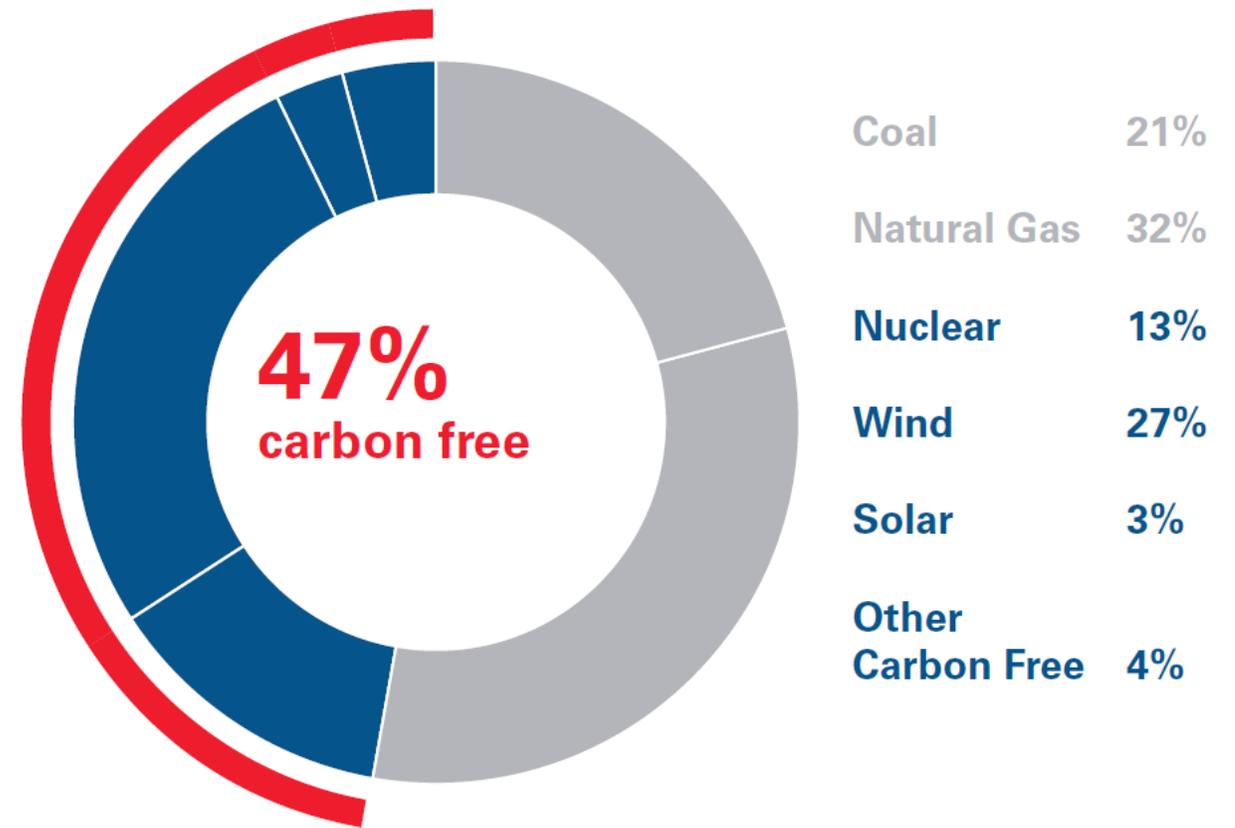


Image Credits: Xcel Energy

# WIDE ARRAY OF RENEWABLE OPTIONS

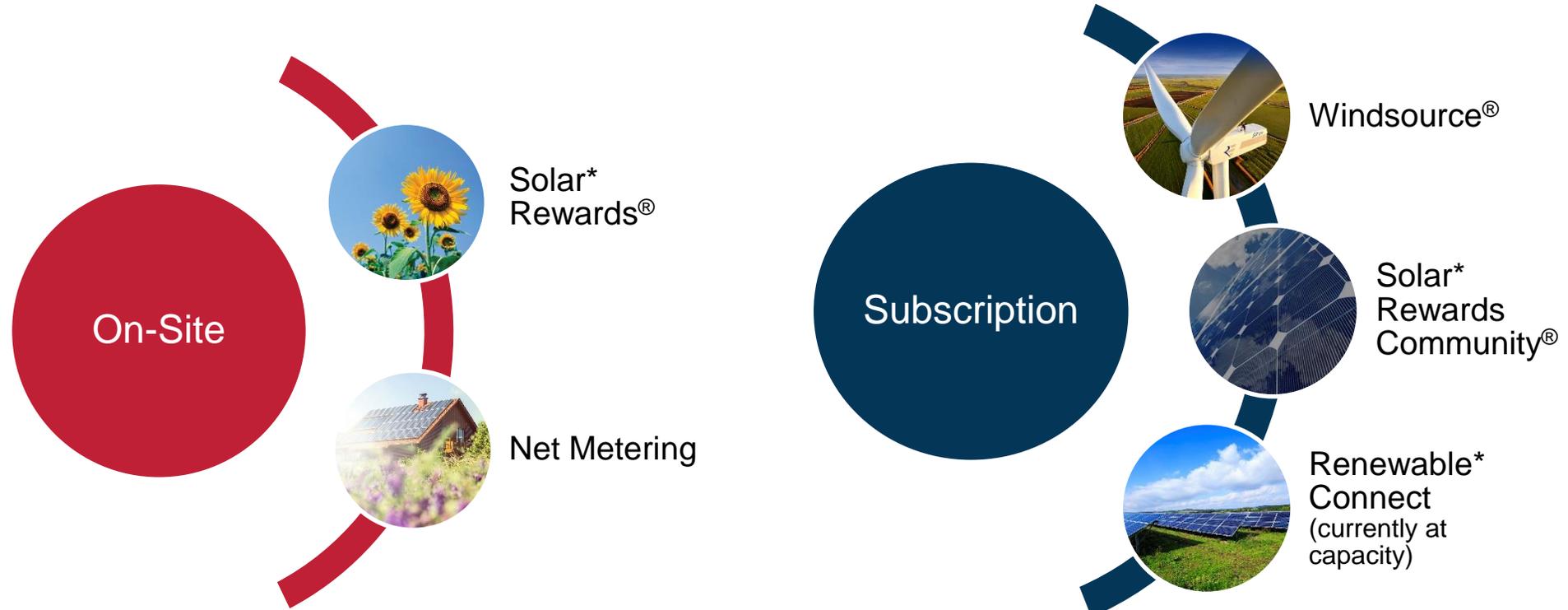


Image Credits: Xcel Energy

# Subscription Options



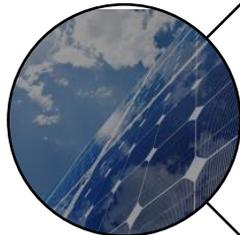
## Renewable\*Connect (currently at capacity)

A dedicated solar resource with locked-in charge and annually updated credit; no on-site equipment, full renewable energy claims & flexible terms



## Windsource

Clean, hassle-free wind energy with full renewable energy claims and no need to install equipment



## Solar\*Rewards Community

Get paid for the solar energy produced from your portion of a solar garden – can help save money but limits renewable energy claims

Image Credits: Xcel Energy



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An Xcel Energy Community Collaboration

# Subscription Options

## Solar\*Rewards Community



- 3<sup>rd</sup> party subscriptions
- Garden owned and maintained by private companies
- Xcel Energy retains RECs
- Bill Credit on the Xcel Energy bill
- Subscribe up to 120% of annual usage

## Windsource



- 100% local wind to offset your energy usage
- Sold in 100 kWh blocks; up to 100% of energy use
- Customer keeps REC
- Net cost = 1.5¢ / kWh

## Renewable\*Connect



- Enrollment currently filled. New offering TBA
- 50 MW solar resource sited in CO
- RECs retired on behalf of participants
- Charge to cover PPA/program costs; annually updated credit based on avoided energy
- Contracted with Xcel Energy



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# THIRD PARTY COMMUNITY SOLAR MODEL

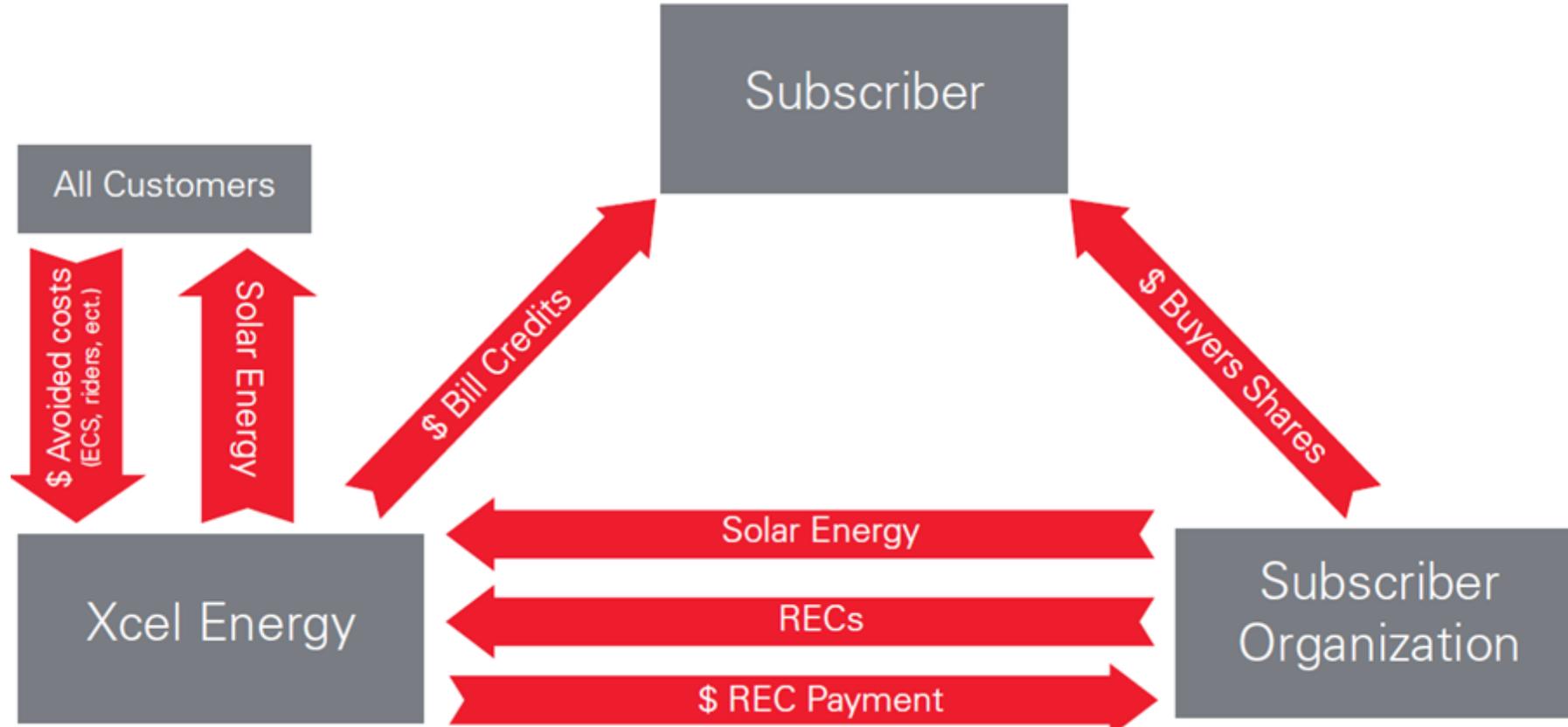


Image Credits: Xcel Energy

# Renewable\*Connect Expansion

An easy and affordable voluntary green tariff program for **commercial and residential customers** to purchase **new, local** renewable energy.

	Colorado Renewable*Connect 1.0	Colorado Renewable*Connect 2.0
<b>Program Date</b>	Filed 2017; Launched 2019	Filing 2021; Launch 2024
<b>Resource</b>	50 MW Solar; Fully subscribed	Program design in development
<b>Enrollment</b>	42 MW Commercial; 8 MW Residential	TBD; MOU's
<b>Term Options</b>	Monthly, 5 or 10 Years	Monthly, 5, 10 or 15 Years
<b>Pricing Structure</b>	Charge (PPA + Program Cost + Risk Factor) Credit (Avoided Capacity + Avoided Energy)	REC Purchase Option Charge (PPA + Flexible Program Cost + Risk Factor) Credit (Avoided Capacity + Avoided Energy)
<b>RECs</b>	Retired on behalf of customer for full term	Retired on behalf of customer for full term



# Onsite Options



## Net Metering

Install and use your own private wind or solar energy, with credit on your Xcel Energy bill if you produce more energy than you use



## Solar\*Rewards®

Net metering, plus extra incentives for the energy you produce – can help save money limits renewable energy claims

Image Credits: Xcel Energy

# Onsite Options

## Solar\*Rewards



- REC Incentive – Xcel Energy buys the REC
- Monthly use is offset
- Must use new equipment
- System can be sized up to 120% of annual usage
- 20-year contract term
- Small (up to 25kW), Medium Program (25-500kW), Large Program (>500kW)

## Net Metering (without incentives)



- Customer keeps REC
- Monthly use is offset
- Can use existing/used equipment
- System can be sized up to 120% of annual usage
- Open enrollment: no application expiration

# RESIDENTIAL PRICING PLANS & SOLAR

- **Time of Use Pricing** - The more you can shift energy use to lower priced periods, the more you can maximize the credits received from solar generation.
- Each pricing plan will have different impacts to not only your bill but also the credit you'd receive for your solar generation. Depending on your situation, one of these pricing plans may be more optimal for your household.

Learn more at [xcelenergy.com/residentialrates](https://xcelenergy.com/residentialrates)



# CITY OF CENTENNIAL

## Permitting Information

- Residential renewable energy does require a permit:
- Contractors must be licensed to work in the City of Centennial
- Usually the contractor will handle on-site solar permitting

# TIPS: GETTING STARTED

1. Understand your energy use and make your home as energy efficient as possible before investing in renewable energy.

## The Smart Energy Living® Pyramid

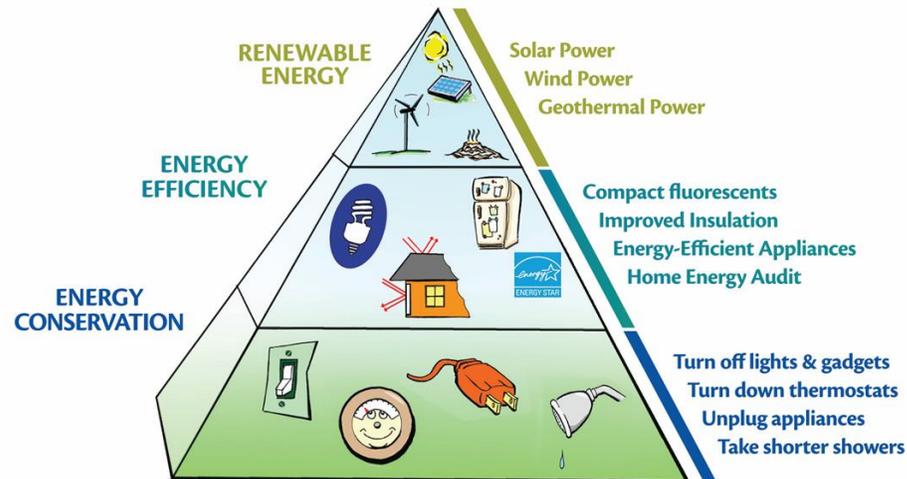


Image Credits: National Energy Education Development Project

## Home Energy Squad®

### \$200 value for \$50

- ✓ Replace incandescent bulbs with LEDs
- ✓ Weather stripping for an external door
- ✓ Install a programmable thermostat
- ✓ Energy-efficient showerheads
- ✓ Kitchen and bathroom faucet aerators
- ✓ Water heater insulation and temperature assessment



**303-446-7910**



**[xcelenergy.com/HomeEnergySquad](https://www.xcelenergy.com/HomeEnergySquad)**



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## TIPS: GETTING STARTED

2. Make a list of what your priorities are for making a renewable energy investment.

### Example Household Priorities

- ✓ Ease or simplicity
- ✓ Upfront or monthly cost
- ✓ Return on investment (ROI) or payback period
- ✓ Environmental benefits or stewardship
- ✓ Leading by example
- ✓ Resale value of home
- ✓ Ownership or lease of equipment

# TIPS: GETTING STARTED

Source: CSU Extension

	<b>BUY</b>	<b>GARDEN</b>
<b>Upfront cost</b>	\$0 possible	Some pay-as-you-go
<b>Tax credit?</b>	Yes	Probably not
<b>Savings</b>	Rate dependent	Can be rate independent
<b>Insurance</b>	Needed	Not needed
<b>O&amp;M</b>	Inverter	None
<b>Resale value</b>	~\$2k per kW (Denver)*	No impact
<b>Resale logistics</b>	Simple	Responsible for transfer
<b>Scalability</b>	Can upsize with prep	Typically scalable
<b>Other</b>	Can add storage	If site not appropriate or if solar not desirable

\*if within same utility service territory



# TIPS: EVALUATING OPTIONS

- Be aware that solar installers are third parties and do not represent Xcel Energy or the City of Centennial.
- Talk with multiple on-site solar installers and assessing a minimum of three bids.
- Compare offers and terms for third party solar gardens and consider several options before making a decision.
- Exercise caution in purchasing RECs.
- Never share your online Xcel Energy account password.

## Example Rooftop Solar Quote

Option A: Paying the Utility	100% Loss
Annual Cost	\$525
Annual Rate Increase	4.5%
Projected 25 Year Cost	\$21,949
Option B: Owning Solar	\$14,418
Federal Tax Credit (26%)	-\$3,749
Local Incentive <i>(Based on availability)</i>	-\$1,500
Net Cost	\$9,169
Payment Plans	
12 Year Plan <i>at 2.99%</i>	\$119
20 Year Plan <i>at 3.99%</i>	\$70

Source: Brendle Group

# RESOURCES

- **Xcel Energy's Renewable Energy Program Information:** [Renewable Energy | Xcel Energy](#)
- **CSU Extension Solar Calculator:** <http://solarcalc.colostate.edu>
- **Google's Project Sunroof:** <https://www.google.com/get/sunroof#p=0>
- **Working with Third Party Providers:** [https://www.xcelenergy.com/programs\\_and\\_rebates/residential\\_programs\\_and\\_rebates/renewable\\_energy\\_options\\_residential/working\\_with\\_third\\_party\\_providers](https://www.xcelenergy.com/programs_and_rebates/residential_programs_and_rebates/renewable_energy_options_residential/working_with_third_party_providers)
- **Colorado Solar & Storage Association:** <https://cossa.co/>



Image Credit: CSU Extension

A screenshot of the CSU Extension Solar Calculator website. The header includes the CSU Extension logo and navigation links for "Home" and "Rural Energy Center". The main image shows a close-up of solar panels. Below the image is a navigation bar with four tabs: "Getting Started" (highlighted in green), "Site & Size", "Financials", and "Results". The "Getting Started" section contains the heading "Getting Started", a sub-heading "Answer the two questions below to find out what information you need to start.", and two questions: "I am interested in:" with a radio button for "Owning a PV system", and "Choose the type of system you are interested in:" with radio buttons for "Rooftop" and "Ground mount". Below this is the heading "Information to Gather" and a list of instructions for gathering data, such as "Access your electricity billing history online or via a phone call to your electric utility."/>

**COLORADO STATE UNIVERSITY EXTENSION** Home Rural Energy Center

Getting Started Site & Size Financials Results

### Getting Started

Answer the two questions below to find out what information you need to start.

I am interested in:

Owning a PV system

Choose the type of system you are interested in:

Rooftop

Ground mount

### Information to Gather

The calculator uses default values wherever possible, but we suggest you gather the following for more accurate results.

- Access your electricity billing history online or via a phone call to your electric utility. Add up all of your kilowatt-hours (kWh) from the last 12 months. Alternatively, simply multiply the kWh from your last bill by 12. (Note: this method will not work for all-electric homes.)



# QUESTIONS?

PLEASE USE THE “RAISE HAND” FEATURE OR TYPE YOUR QUESTION INTO THE CHAT BOX



## WRAP-UP

- Please answer the final polling question
- Send any questions or comments to [energy@centennialco.gov](mailto:energy@centennialco.gov)
- Check out the Energy Action Plan at: [www.centennialco.gov/energy](http://www.centennialco.gov/energy)

# SOLAR INCENTIVES IN COLORADO

As of June 2021



- Net Metering with Xcel Energy
- Federal Investment Tax Credit (ITC)
  - Deduct 26% of the cost of installing a solar energy system from your federal taxes (through January 2023; 22% in 2023)
  - Applies to solar PV system purchases
- Colorado Sales & Use Tax Exemption for Renewable Energy Equipment
- Colorado Property Tax Exemption for Residential Renewable Energy Equipment

# RENU LOANS



The Colorado RENU Loan is a statewide residential loan program sponsored by the Colorado Energy Office in partnership with Colorado-based credit unions. It makes home energy upgrades easy and affordable by offering low-cost, long-term financing for energy efficiency and renewable energy improvements.

## Loan Terms

- Low, fixed interest rates starting at 2.75%
- No money down; finance up to 100% of project cost
- Loan terms up to 15 years (or 20 years for solar PV)
- Loans up to \$50,000
- No prepayment penalties

## What Can You Finance?

- Solar PV & solar thermal
- Space heating & cooling
- Insulation & air sealing
- Water heating
- Windows & doors
- [And more!](#)

<https://www.colorado.gov/pacific/energyoffice/colorado-renu-loan>



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# SOLAR GARDENS



- Subscription agreements are between you and the garden operator so you may or may not save money by participating.
- These are offered by a variety of for-profit and nonprofit entities, including but not limited to solar developers, municipalities, or other community organizations.
- Credits will be added on monthly utility bills for the solar energy that the subscription contributes to the energy grid.
- Research multiple options before entering an agreement. Visit [xcelenergy.com/SolarRewardsCommunity](https://xcelenergy.com/SolarRewardsCommunity) to find a list of solar operators.
- 6MW of Community Solar Gardens are available to income qualified customers through Energy Outreach Colorado! Contact [solar@energyoutreach.org](mailto:solar@energyoutreach.org)